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ABSTRACT

Representatives of the School-to-Work Roundtable studied education systems and work force training programs in Denmark and Germany. The group visited vocational schools, technical colleges, and firms sponsoring apprentices in Copenhagen and Munich and spoke with students, teachers, and mentors in apprenticeships in metalworking, textiles, electronics, and the culinary arts. They learned how youth training systems in these countries work and how these systems fit into national strategies for economic and work force development. Although the group did not advise recreating either country's system in the United States, the members believed that many aspects of these programs could inform planning and practice. These included the following: (1) developing a commitment to preparing youth for further schooling, work, and adult life; (2) creating clear pathways for students that are easily understood by all involved; (3) reforming education to make learning relevant to lifelong needs; (4) building strong partnerships among the business, industry, and education communities as the basis for system development; (5) raising standards for all students in both academic and technical programs; (6) organizing school-to-work programs around industry clusters; (7) developing a curriculum that fully integrates academic and work-based learning across a wide range of disciplines; and (8) creating flexible systems that can respond to current and future economic challenges. (YLB)

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Issue Brief

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# EUROPEAN SCHOOL-TO-WORK SYSTEMS: A VIEW FROM THE AMERICAN STATES

## Summary

This *Issue Brief* reviews the lessons learned by participants on the National Governors' Association School-to-Work Roundtable study tour to Copenhagen and Munich. The group learned how youth training systems in Denmark and Germany work and how these systems fit into national strategies for economic and workforce development. For many members of the study group, this review of Danish and German youth training systems confirmed that American states' development of a system to support youth is on the right track. They believe that states have begun to identify the correct components of the system and now need to move forward with their development. Although the group does not advise recreating either country's system in the United States, the members believe that many aspects of these programs can inform planning and practice in this country. These include:

- developing a commitment to preparing youth for further schooling, work, and adult life;
- creating clear pathways for students that are easily understood by all involved;
- reforming education to make learning relevant to lifelong needs;
- building strong partnerships among the business, industry, and education communities as the basis for system development;
- raising standards for all students in both academic and technical programs;
- organizing school-to-work programs around industry clusters;
- developing a curriculum that fully integrates academic and work-based learning across a wide range of disciplines; and
- creating flexible systems that can respond to current and future economic challenges.

## Background

Representatives of the School-to-Work Roundtable, led by Governor Arne H. Carlson of Minnesota, recently studied education systems and workforce training programs in Denmark and Germany.



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Teams from Arkansas, Colorado, Massachusetts, Michigan, Minnesota, New Jersey, and Wisconsin met with industry leaders, chamber of commerce members, union representatives, and educators in both countries. The group visited vocational schools, technical colleges, and firms sponsoring apprentices in Copenhagen and Munich and spoke with students, teachers, and mentors in apprenticeships in metalworking, woodworking, textiles, electronics, and the culinary arts.

## Developing Systems for Supporting Youth

Both Denmark and Germany have systems for preparing youth for work that are an integral part of the educational and adult training systems. Following ten years of compulsory education, *almost all youth in these countries participate in a two- or three-year apprenticeship, attend technical school, or receive a free university education.* Members of the roundtable described these systems as "transparent," with pathway entrance requirements, procedures, and outcomes that are clear and well-known to students, parents, teachers, workers, and employers.

The various youth apprenticeship programs that students may attend run for different periods on different schedules and with different curricula, yet they are all *linked together into a coherent system that is governed by common rules and requirements.* Employers express confidence that apprentices, regardless of the school they attend or the firm in which they apprentice, gain a high level of skill and a good attitude toward work. This systemic approach to providing vocational training contrasts sharply with the wide variety of programs to which American youth have access, most of which have different entrance and exit requirements and about which little is known in terms of student outcomes.

*Within the technical pathways, the link to employment is clear and students understand the link between their performance in these programs and their future employment prospects.* Consequently, youth take their work seriously and take responsibility for their learning. Educators and workplace mentors reinforce the importance of attitude, effort, and performance to the student's ultimate success.

From the conversations with employers, labor union members, and educators in both countries, it is clear that *youth are highly valued as a national asset* and are viewed as a key to each country's future economic and political well-being. The high levels of unemployment and the floundering commonly experienced by American youth as they find their place in the marketplace would be unacceptable in both of these countries for social and economic reasons.

Of critical importance to the United States is creating clear pathways for students that link their performance directly to their future success. The transparency of the Danish and German systems enables everyone—parents, teachers, students, employees, and employers—to understand the choices available and the ways to follow a given pathway. Students, too, understand fully the linkages among their school performance, their future choices, their ability to learn skills, and their chances of obtaining good jobs. For American students, too often this connection among school performance, work, and success is fuzzy and ill-defined.

## Linking School, Work, and Adulthood

The School-to-Work Roundtable found that despite the clear vocational orientation of these youth apprenticeship programs, their purposes are broad and multifold. Adults working within the Danish and German youth apprenticeship programs see the programs as *preparing youth for adulthood, the world of work, citizenship, and individual responsibility.* In Denmark, where the occupational pathways are broader than in Germany, the preparation of youth for adulthood is seen as one of the main purposes of the system. In Germany, where the occupational pathways are narrower and the preparation for a specific job receives greater emphasis, preparation for work is seen as preparation for life.

*Youth apprenticeship programs are part of the larger training system that covers adult training, further skill development, and retraining.* Advanced technical training for incumbent workers to learn new technologies and techniques as well as training for advanced skill certificates, such as the German Meister, are provided through the same local industry councils, chambers of commerce, and technical schools. Workers in each of these countries routinely receive two to three weeks of advanced training or continuing education annually as part of this system.

A skilled labor force is seen as a key to economic competitiveness and growth in both Denmark and Germany. A central role of these training systems is to prepare highly skilled and flexible workers for the economy, ensure continued upgrading of skills, and limit periods of unemployment because of changes in skill needs. The people running the systems and programs directly link the outcomes for individuals directly to the country's economic success.

School-to-work systems in the United States must not focus on narrow occupational training. They should provide the basis on which youth can make responsible decisions about their futures. Programs in the United States should be better organized to meet the needs of adolescents. Students in the Danish and German systems have much more contact with adults—over a longer period, in school and on the job. In both settings, adults work directly with youth to help them set goals, learn skills, and develop strategies for success.

## Strengthening the Public/Private Partnership

In Denmark and Germany, business, industry, and labor have confidence in the training systems because they set the goals for student outcomes, participate in the training, and monitor the quality of training by observing the performance of the apprentices.

In Denmark national councils of employers and labor unions define the goals for student performance for each apprenticeship program, which are then ratified by the Ministry of Education. Local councils with representatives from local industry and labor govern the technical schools and training programs in their region. The local councils and technical schools create the opportunities and develop the lessons they believe will best help students reach these goals. Because of this decentralization and

flexibility, both employers and educators in Denmark report a fairly rapid response to changing industry needs within the technical schools.

In Germany curriculum frameworks are determined nationally, creating a more uniform approach throughout the country. Local training programs are provided by vocational schools and directly by large firms. These training programs are governed by the local chamber of commerce in which all firms are required to participate. The labor unions work with employers and the chambers of commerce to develop programs, including the operation of interfirm training centers for specialized training that smaller firms cannot provide. The designation of uniform national standards that require approval through many channels makes change difficult. Some are dissatisfied with the slowness with which the German apprenticeship system responds to new demands and techniques in industry.

The governance of the training systems in both these countries is characterized by strong labor-management cooperation. Despite disagreements, both employers and union members take a long-term view of the need for highly skilled labor in the workforce. Labor tends to favor broader training, while employers focus on specific occupational skills. However, both labor and management also benefit in the short term. Unions view apprentices as a way of creating new members, while employers see apprentices as a way of screening and acculturating new employees.

During the study tour, business, industry, and union leaders in both Denmark and Germany reflected upon the rapid changes occurring in the marketplace and the workplace. They all assert that *the ability of workers to increase skills and adapt to new technologies is a critical factor in their ability to meet the challenges these changes create and is a key to preserving the high quality of life in these countries.*

The importance of building strong partnerships with business and industry as the foundation for a school-to-work system in the United States cannot be overstated. The development of a skilled labor force must be driven by industry. A system in which business, industry, and labor have a solid investment builds in accountability mechanisms for students, programs, and curricula that ensure high quality and responsiveness to economic needs.

## Raising Standards for All Youth

In contrast to the United States, *Danish and German youth entering both the technical and university systems are given strong academic preparation* that provides students at the age of fifteen or sixteen with an education equal to or greater than a college preparation course of study in a typical American high school. In Denmark all students receive the same preparation in core subjects through compulsory school, and in Germany all but a few highly talented students receive the same core education. This standard education is a demanding program of learning for all students that includes advanced math, science, history, and languages.

Students in apprenticeship programs are taught both academic and technical skills. In the technical schools, students take courses in math, science, and writing, with the material targeted directly to their technical area of study so that they see real-life applications related to their learning. All students are expected to master the basic material at a high level. In Denmark teachers are especially attuned to the need for all students to succeed, and they work extensively with individual students to accept responsibility for their learning and to help them gain the skills they need. In Germany individual teachers do not take responsibility for a student's success or failure, though the school is responsible for the overall performance of its students.

Generally, students participate in an apprenticeship program as a class following a clearly defined pathway. A small group of adults is responsible for the training of each of these classes within the technical school. Individual students are assigned a mentor in the firm where they apprentice who is responsible for the student's training and progress. An entering group of students will take core academic and technical classes together, alternating sessions in the technical school with sessions in individual firms. Most students beginning the program together will follow the same schedule, reuniting during each session at the technical school. This grouping of students and close affiliation with a small number of adults *creates a community of learners among the students that facilitates the transfer of knowledge and expectations within the group.*

In Denmark programs within the same industry cluster receive the same amount of funding per student, making resources uniformly available. Consequently, there is very little concern about the quality of programs in different parts of the country. In Germany local communities are much more dependent on their own resources to develop and sustain apprenticeship programs, producing wider disparities in the quality of programs. However, the uniform national standards provide some guarantee of high-quality skill training.

For school-to-work programs in the United States to attract and retain students, the academic and technical training they provide must meet the high standards evident in the Danish and German systems. The Danish and German systems demonstrate that all students can achieve at high levels in programs that emphasize real-world connections, applied learning, and advanced problemsolving. The current fissure in the expectations of academic and technical programs in the United States needs to be replaced with an expectation that all students must meet high standards. In the future, everyone must be prepared to work with their head as well as their hands.

Danish and German youth training systems are founded on industry clusters. Building school-to-work curriculum, programs, and partnerships in the United States upon the model of industry clusters provides a natural way to link the interests of educators and business leaders. Coordinating firms, workers, and educators in the same industry builds natural ties around common needs and interests. At the state or local level, each cluster—electronics, finance, medicine, hospitality, etc.—should be encouraged to develop its own skill standards, program requirements, and guidelines and to sponsor local programs that meet those expectations.

## Developing Curriculum

The goals of each apprenticeship program are set by business and labor in each industry cluster. Within each of these clusters, employers, union representatives, and educators work together to develop curriculum, govern programs, and attract students. In Denmark the traditional 300 occupational categories have been collapsed into 86 occupational clusters defined by broad industry clusters. In Germany there are 378 youth apprenticeship programs, down from 700 in the past, reflecting this country's narrower occupational orientation. However, even in the narrower occupational programs, students receive a broad skill-based education reflecting all aspects of the occupation they are learning.

In both Germany and Denmark students enter apprenticeship programs between the ages of fourteen and sixteen after having completed a strong foundation of formal education. The reading, writing, and math skills of the average sixteen-year-old in these two countries equals or exceeds the skills of most American high school graduates. During the period of formal academic schooling, German and Danish students tend to take fewer subjects, but they are expected *to master these basic subjects at a higher skill level than what is expected of American students*. Foreign language training is a part of the core curriculum for all students.

The curriculum in the apprenticeship programs is very applied, with lessons in advanced science, math, and writing focused on the problems presented in business and industry. *Instruction is provided primarily in a work-like setting using tools and materials encountered in the workplace*. Students in the schools are presented with problems and tasks that they work to master individually or in groups. This learning is reinforced and tested during their sessions in the workplace, where students are involved almost immediately in productive work. The direct link to the workplace also provides a self-correcting connection that validates the curriculum in the technical schools.

The *incentives to maintain a high-quality program and to master complex skills are a natural outcome of the way the system is organized*. Programs that cannot attract students or apprenticeships for their students are allowed to close. Programs for which there is greater demand are allowed to grow. Firms with apprentices who perform poorly on the final exams are not allowed to have apprentices in the future. Within the programs, students are given the responsibility for mastering the material and are given multiple opportunities to succeed. *Assessment of students' skills is based on objective criteria* related to their ability to perform specific tasks at a designated level of precision. Judges are experienced workers within the industry who evaluate whether or not the product meets or exceeds the specified standards. Students who do not succeed are not certified and therefore are not allowed to work in that field in a skilled position and experience difficulty in getting a good-paying job.

The Danish and German training systems demonstrate that all youth can master high skills when they are provided with a curriculum that emphasizes real-world applications, hands-on learning, and clear connections to work and future options. In building school-to-work systems in the United States, all of these elements need to be incorporated into the curriculum and pathways for youth so students are provided with rich educational and work-based opportunities that create connections for success.

## Challenges to the Traditional Training Systems

Although enjoying broad public support, the training systems in both countries are finding that *the current economy requires more flexible and adaptable systems than in the past.* In Denmark the system has become more flexible, affording students more opportunities to transfer from one program to another or to switch between the technical and university pathways. The number of occupational categories has been reduced from 300 to 86, offering youth broader training with a greater guarantee of employability. In Germany employers are somewhat critical of the more rigid system of training that does not respond quickly to changes in business practice and needs. Germany still sponsors apprenticeships and training programs in 378 different occupations that are linked to the craft guilds and traditional methods of training and production.

*The tension between the technical system and the university system is increasing in both countries.* In 1960 only 5 percent of youth in Denmark and 10 percent in Germany attended the gymnasium and the university. By 1994 the proportion of youth attending the university increased to 40 percent of Danish youth and 30 percent of German youth. In Germany traditional workers resent the length of time youth are spending at the university with their tuition paid while journeymen must pay for their advanced training. Although neither system has extensive youth unemployment, good apprenticeships are more difficult to find in some locations and full-time employment upon completion of an apprenticeship or technical school is less certain than it was two decades ago. However, youth unemployment still hovers at a low 7 percent, compared with 17 percent in the United States. Youth unemployment in Denmark and Germany is no higher than adult unemployment.

Despite these challenges, the Danish and German systems provide high-quality training for the vast majority of their youth. A commitment to do the same is missing in the American education and training systems.

## Moving Ahead in the American States

Although many of the state representatives on this study tour are confident that the correct elements of state school-to-work systems have been identified, they are also concerned about how to link these elements to local programs in a way that fulfills the promise of increased opportunities for the "forgotten half" of American students. For school-to-work efforts in this country to change significantly the employment prospects of youth and the competitive advantage of American businesses, *state efforts must continue to emphasize raising the level of achievement for all students, building strong community partnerships that include small and medium-sized firms, and developing opportunities for students in communities where employment opportunities are scarce.* There is also some concern about the readiness of many businesses to transform their ways of doing business to become more competitive and to consider their long-term interests as well as their short-term profits.

Finally, Carl Weigell, chairman of Motor Casting Company in Milwaukee, Wisconsin, Challenged the study tour members to "move away from pilots and models and scale up the process of change. We can't wait until all of the system elements are in place or until everyone is ready to start changing

things. We need to act now . . . there is no alternative. *If the patience of business and industry leaders is not to be strained, educators and state agency personnel will have to move faster than they are accustomed to doing.* Simultaneously, business leaders and employees will need to develop a long-term commitment to work collaboratively on developing and maintaining the curricula and linkages necessary to make the programs work. If school-to-work initiatives in the United States successfully emulate the best of the European training systems, they will go beyond fixing current programs to provide a new way of supporting youth that creates a close relationship among lifelong learning, job opportunities, and economic success. The lessons learned presented here provide a framework for how that system should operate.